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EDUCATION AND TRAINING NEEDS FOR USING COMPUTERS IN SMALL BUSINESSES

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July 1986

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The research for this report was supported by funds from the National Institute of Education (Grant No. NIE-G-83-0003) and the National Federation of Independent Business. The analyses and conclusions do not necessarily reflect the views or policies of these organizations.

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Abstract

Small businesses are increasingly considering the application of computers to their office operations. However, little is known about the types of education and training required of their personnel for such applications. This study is based upon survey results for almost 3,000 small businesses regarding their consideration, adoption, and use of computers.

About 40 percent of the sample had acquired computers at an average cost of over $36,000 for hardware and software. When such costs are analyzed by size of firm and projected to the national population of small businesses, it appears that more than $33 billion had been invested in computers by such firms in the autumn of 1985. The respondents indicated substantial benefits from using computers including improved productivity and higher work quality.

Education and training requirements that business owners emphasized were primarily reading and comprehension skills and reasoning skills rather than mathematics skills, formal computer training, or prior computer experience. Most of the respondents thought that the application of computers to their businesses was easy to learn. The average duration of training was only about 30 hours.

The study concludes with an analysis of educational requirements for computer use in small business. It is argued that emphasis in elementary and secondary schools should be placed on general knowledge and skills (oral and written communication, reasoning, numerical skills, and so on) rather than a narrow technical orientation to computers. It is also shown that these conclusions are consistent with those of national reports that consider how to best prepare the young for the workplace.

I. INTRODUCTION

Americans often have a nostalgic view of small business that tends to ignore the role that such businesses play in generating employment and innovation in the economy. The omnipresent image of the large corporation as the driving force of economic progress and employment--an image that is magnified and honed by the mass media--has made small businesses appear to be a symbol of the past rather than a dynamic contributor to the economic vitality of the Nation. Therefore, it may be a surprise to learn that in the last fifteen years, small businesses have generally outperformed larger enterprises in generating employment and in their contribution to innovation.

Different definitions are used to classify small businesses. Some government reports define them as firms with fewer than 500 employees, while others define them as enterprises with under 100 employees (U.S. Small Business Administration 1984: 7). Studies of innovation by size of firm have found that small businesses produce a disproportionate share of product innovations relative to their size and bring them to market faster than large businesses (U.S. Small Business Administration 1983: Chap. 4). Relative to their employment they produce about two and a half times as many innovations as large firms.

In addition, small businesses have outperformed large ones in generating increases in employment.[1] According to an extensive analysis of employment growth, firms with fewer than 100 employees held just 36 percent of total employment in the

U.S. in 1976, but they created 51 percent of the new jobs between 1976 and 1980 (Armington 1983). Armington (1983) also found greater employment stability among small firms than larger ones between 1976 and 1980 in that employment in small firms showed less volatility in employment growth and shrinkage. During the 1980-82 recession, businesses with under 20 employees generated all of the net gain in employment in the U. S. (U.S. Small Business Administration 1984: 236). Further, a recent Dun and Bradstreet survey found that two-thirds of the 3 million jobs expected to be generated in 1986 will be created by firms with fewer than 100 employees (Koretz, 1986).

The accomplishments of small businesses in generating employment and innovation have been derived in spite of such obstacles as high interest rates, regulations that are relatively more difficult for small businesses than large ones to comply with, and little attention to educational requirements of employees for small businesses. Rather than taking for granted the remarkable performance of small businesses in generating employment and innovation, it is important to consider how their potential in these areas might be harnessed to national needs for increasing employment and the international competitiveness of the U.S. economy.

The lack of specific attention to educational needs of small businesses is especially surprising since it appears that the vast majority of workers obtain their first employment in these firms, even if they later work for larger enterprises (Schiller

1983). Since a high proportion of workers eventually take jobs in large firms, the quality of their employment experience and training in small enterprises will affect their productivity in larger ones as well.

This report addresses the education and training needs of small businesses for using computers in their operations. Although larger firms have used computers extensively for some time, it is only with the advent of the micro-computer that opportunities have opened significantly for smaller firms to take advantage of computer capabilities. Since 1980 the availability of relatively low cost micro-computers with substantial performance capabilities and software that is relatively easy to use for productive business applications has led to a virtual explosion in the adoption of computers by small businesses.

In general, there has been a deep concern about the implications for educational policy of the rapid proliferation of computers in the workplace (Levin and Rumberger 1983). Some national reports have suggested a need for greater technological and computer literacy for the workplace of the future (National Commission on Excellence in Education 1983; Task Force on Education for Economic Growth 1983), while others have suggested that the computer skills needed for most workers can be easily taught on the job to workers with a strong general education (National Academy of Sciences 1984).

None of these studies has addressed the specific needs of small businesses, where more meager resources may limit the

extent and types of training programs. In fact, a recent study of the Office of Technology Assessment of the U.S. Congress (1985) on office automation has a single chapter on the small business. The most notable feature of the chapter is its stress on the lack of information on the extent and consequences of office automation in small businesses. This study is designed to fill some of that information gap by obtaining data from a large survey of small businesses on their experiences with computers.

II. THE SURVEY

The goal of this study was to survey a large national sample of small businesses to ascertain the extent to which they had acquired computers and their assessment of the education and training requirements for employees who use computers. In order to obtain a context for interpretation of the data, it was necessary to obtain information on: the acquisition of computers by size and type of firm; investments in computer hardware and software; uses of computers; the types and configurations of equipment, and user satisfaction with computers. We were also concerned with why some firms have not acquired computers, and the benefits of computers as perceived by small businesses.

Beyond this background information, we were interested in how respondents assessed the education and training requirements associated with working with computers. What was the source of training, and how much on-the-job training was needed? How

difficult was it to use computers, and what were the main problems that arose? And, given a choice between computerized methods and their personnel requirements and manual methods and their requirements, which was preferable.

The overall results of the survey are reported in Rumberger and Levin (1986). In this report we wish to focus specifically on the education and training requirements for using computers in small businesses. However, we will first provide some details on the survey and the sample of firms that responded as well as the extent to which they have acquired computers, their computer applications, and their levels of investment in computer hardware and software. This information will serve as background for the subsequent presentation of the findings on education and training requirements.

The survey represented a joint undertaking between the Institute for Research on Educational Finance and Governance (IFG) and the National Federation of Independent Business (NFIB). The NFIB is the largest association of small businesses in the Nation. In 1985 it had a membership of over half a million businesses, representing roughly one of every ten employers in the U.S. The NFIB does periodic surveys of its members to obtain their views on particular issues that are considered of interest to small businesses. Attempts have been made to compare the NFIB sample of small businesses with the overall population of such firms. Such comparisons are problematic because different government agencies use different definitions and reporting

systems. However, comparisons of the NFIB samples suggest that they are reasonably representative of American small businesses (Dunkelberg and Scott 1984).

IFG and NFIB collaborated in the design of a questionnaire to survey computer use of small businesses. The design and format of the questionnaire and the approach to construction of the items was based upon the recommendations of Dillman (1978) who has shown that design considerations can improve considerably sample response and usefulness of survey results. A preliminary questionnaire was sent to 30 members of NFIB, at random, to ascertain its effectiveness and to obtain suggestions that might improve it. On the basis of these results, the questionnaire was modified and further refined. In the first week of October the questionnaire was mailed to about 10,000 randomly selected members of the NFIB. A postcard reminder was sent out two weeks later, and a second copy of the questionnaire was mailed three weeks after the initial mailing to non-respondents.

Some 2813 usable questionnaires were returned for a response rate of about 28 percent. This compares favorably with other surveys of small business. For example, the Committee on Economic Development sent out a questionnaire to an NFIB sample in 1984 requesting information on the characteristics that they seek in their employees (Levine 1984). That survey yielded only a 10 percent response rate. NFIB surveys of its own membership typically provide rates of response between 5 and 10 percent. The

distribution of responses is quite similar to the distribution of membership in NFIB as shown in Table 1.

III. OVERALL RESULTS

In this section we will report information on the extent of computer acquisition, the types of uses to which computers are put, investment in hardware and software, and perceived advantages of using computers. This discussion will serve as a prelude to the next section which will present data on the education and training requirements for using computers in small businesses.

About 40 percent of the respondents had acquired computers. The rate of computer acquisition was only about 26 percent for the smallest firms, those with 1-4 employees. However, as firms reached a size of 10 or more employees, over half had computers; and over 80 percent of those with 50-99 employees had acquired computers. The rates of acquisition also varied considerably among types of businesses with about half or more of the firms having computers in professional services; finance, insurance, or real estate; wholesale trade; manufacturing; and transportation, communications and public utilities. Computer acquisition was also associated with growth rate in sales or revenues, with those firms experiencing more rapid growth rates over the previous two years being more likely to have purchased computers than those with slower growth rates or declines in sales.

Table three shows the expenditures of firms on hardware and software by size of firm. The average expenditure among all firms was about $36,000 for hardware and software, with about two-thirds of this amount devoted to hardware. However, firms with 20 or more employees spent considerably more than this average and those with 19 or less employees spent considerably less. If the results for this sample are representative for the more than 4 million small businesses in America, we estimate that the total investment in hardware and software in October 1985 was more than $33 billion.

Table four presents an analysis of the uses of computers by size of firm. About half or more of all firms used computers for word processing, financial spreadsheets, accounting, or billing, with about two-fifths using them for payroll, mailing lists, and inventory. For many, but not all, applications, the use of computers increased with the size of the firm.

Respondents were asked to indicate the benefits that they had reaped from purchasing a computer. Table five reports these results. Over half concluded that the computer had improved productivity, made work easier, improved the quality of work, and improved information about the business. Between one-third and half said that it had improved the organization of the business and made work more enjoyable. Almost one-third indicated that the most important benefit was improved information about the business. About one quarter emphasized improved productivity as the most important benefit, and one fifth stressed improved

quality of work. These three benefits were named as the most important ones by over three quarters of the respondents.

Respondents were also asked if computers had changed the amount of time it takes employees to accomplish the same amount of work. Some 78 percent indicated reductions in the time required to do the work with 15 percent reporting no change in time and 7 percent responding that it increased the amount of time required (Rumberger and Levin 1986: Table 23). About one-third of the respondents reported decreases in time requirements of between 10 and 25 percent; about one quarter indicated time reductions on the order of 25-50 percent; and over 13 percent reported larger decreases in time allocations to existing work.

In summary, large numbers of small businesses are using computers, and they have made a healthy investment in hardware and software. Among these businesses, computers are used for many different tasks. Finally, small business users indicate substantial benefits from using computers, a finding that contrasts with a recent evaluation in Fortune that reports relatively few benefits for large firms (Bowen 1986).

IV. EDUCATION AND TRAINING

One of our major concerns was that small businesses might face difficulties in acquiring employees with adequate skill levels or in training employees to use computers for office applications. Some have argued that computer technologies in the workplace require strong skills in mathematics and familiarity

with computers as well as considerable applied training. We will call this the technical education view, a perspective that suggests that schools should provide quantitative and technical skills to their students to prepare them for a computerized world, whether in small or large businesses. If correct, it poses a particular problem for small businesses, since they may be unable to attract and pay for such talent.

But, others have suggested that applications of computers to office work are designed to be "user friendly" and to build upon applied knowledge of the business as well as a set of easily learned procedures. This view implies that the use of computers does not require any specialized knowledge that cannot be easily learned in the workplace. Rather, the focus should be placed on general educational skills that can enhance learning. We will call this the general education view.

Up to now there has been little concrete information that can be used to evaluate these conflicting views. Accordingly, a major purpose of this survey was to obtain the opinions of small business employers who were using computers. Computer users were asked to indicate the most important employee characteristics for learning to use the computer and to attach a relative importance to each. Table Six shows these results.

For analytic purposes we can divide the categories into those that support the technical education view that quantitative and computer skills are more important and those that support the general education view that general skills of a non-quantitative

nature are more important. The categories of mathematics skills, formal computer training, and prior computer experience were used to summarize the first set of requirements. The categories of reading and comprehension skills, and reasoning skills were used to summarize the second set of requirements. Applications skills (such as bookkeeping and typing) were considered to be requirements that did not fit into either category, but that might require previous vocational training or experience. Finally, interest and enthusiasm seemed to be characteristics that were not tied to either technical or general education.

On the basis of the responses, it appears that the general education view is more compelling. Reading and comprehension skills, and reasoning skills are considered to be very important by 67 percent, and 56 percent of the respondents respectively. Only 2 - 3 percent of the respondents indicated that they had no importance. In contrast, mathematics skills, prior computer experience, and formal computer training were thought to be important by only 16 percent, 8 percent, and 16 percent of the respondents respectively. Between 29 and 53 percent thought that these characteristics had no importance at all.

The most important category among the responses was the interest and enthusiasm of the employee with 78 percent indicating that it is very important and only 2 percent responding that it is not important. It is difficult to tie this particular characteristic to either general or technical education. But, it is instructive to note that it is considered

more important than any single educational characteristic. The category of applications skills occupied an intermediate position with 32 percent of the respondents considering it very important and 9 percent considering it not important.

Respondents were also asked to indicate which particular characteristic was most important and which was second in importance. These data also provide more support for the importance of general education rather than a narrower quantitative and technical education. Almost half of the computer users ranked reading and comprehension skills as the most important or second most important characteristic, while almost two out of five respondents ranked reasoning skills this highly.

In contrast, only 2 percent ranked mathematics skills among the two most important characteristics, 6 percent ranked prior computer experience at this level of importance, and 14 percent ranked formal computer training as among the top priorities. Again, interest and enthusiasm topped the list with 73 percent indicating its high priority. Application skills were ranked between the general and technical groups of characteristics with 23 percent indicating these skills as being either most important or second most important.

On the basis of this analysis, it appears that while attention to technical and quantitative aspects of education is probably helpful for working with computers in small businesses, it is a far lower priority than reading and comprehension and

reasoning skills. It is also important to point out that interest and enthusiasm were considered the most important characteristics, more important than any single educational characteristic. Whether this is a characteristic that simply varies among individuals personalities, is elicited by the organization and incentives of the workplace, or can be inculcated by the educational system is beyond the scope of the survey. However, this issue should certainly be a high priority in future research. Finally, applications skills seem to be helpful, but hardly crucial to job performance.

A related issue is the difficulty of learning to use the computer for small business office functions. Again, the general views on this subject diverge considerably with some suggesting that use of computers in the workplace requires "computer literacy" and technological skills, that the technology is difficult to master, and that substantial retraining is required as workers shift from manual to computer methods. Others such as Joseph Weizenbaum suggest that computerized equipment typically requires little or no knowledge of computers. His point is that most people are able to use sophisticated technologies such as the telephone or automobile without an intimate knowledge of the underlying technical intricacies, and the same is true for techniques based upon use of computers (Weizenbaum 1983).

Accordingly, small business computer users were asked how easy is it to learn to use the computer for their applications?

A total of almost 81 percent thought that it was very easy (20 percent), somewhat easy (35 percent) or average (26 percent) to learn (Rumberger and Levin 1986: Table 17). About 18 percent reported that it was somewhat difficult to learn, and less than 3 percent found it very difficult to learn. These findings support the view that the application of computers in small businesses does not seem to provide an extraordinary challenge with respect to learning to use them effectively.

Those respondents who found it somewhat difficult or very difficult to learn to use the computers were queried on the reasons for the difficulties. Some 56 percent implicated poor manuals, and 56 percent mentioned inadequate training (Rumberger and Levin 1986: Table 17). Only 32 percent thought that the technology was too complicated. Given that less than one fifth of the users found the computers to be somewhat or very difficult to learn to use, and 32 percent of these gave as a reason that the technology was too complicated, it appears that only about 6 percent of all small business users of computers in this survey found the technology too complicated.

Users were also asked the primary means of learning to use the computer. The responses for each type of training were: On-site training, 45 percent; manuals, 25 percent; off-site training, 19 percent, tutorial software, 7 percent, and other, 5 percent (Rumberger and Levin 1986: Table 20). In summary, almost two-thirds received formal training at or away from the employment site, and over one-quarter used manuals. The average

duration of training was 30 hours or a bit less than four days. This also suggests that training requirements are relatively minimal, despite the sophistication of the technology.

A final question that pertains to education and training was one that asked the small businesses who were computer users whether they would hire a traditional bookkeeper or a person who would use a computer for such tasks. Some 79 percent of respondents favored the hiring of a worker who would use the computer (Rumberger and Levin 1986: Table 19). When asked the reason for hiring a computer worker, the most important reason (70 percent of respondents) was that such a person could do a better job. However, 23 percent of respondents thought that they could hire a person with less formal education by choosing a computer operative for the job; 27 percent thought that the computer worker would need less previous training; and 28 percent believed that the computer operative would require less on-the-job training to do the same job.

V. OVERALL CONCLUSIONS

Perhaps the most important finding of this study is that the education and training requirements--indeed the personnel requirements--for working with computerized offices in small businesses are not very different from those set out in recent studies on educational and training needs for the more general workplace (Committee for Economic Development 1985; National Academy of Sciences 1984; Wilms 1983). Those studies have

emphasized two sets of characteristics: (1) general knowledge and skills (such as oral and written communication, reasoning, numerical skills, and so on) that are the basis for carrying out existing work tasks and that provide a strong advantage in training for new ones; and (2) positive attitudes towards the workplace and work tasks.

The first of these is recognized in the perceived importance by computer users of reading and comprehension and reasoning skills relative to previous knowledge of computers or specialized training with computers. While specialized quantitative, computer, or technical training will probably do no harm and may do some good in the workplace, it should not be a substitute for more general educational skills based upon reasoning and communication proficiencies. That is, there is no evidence in this survey that we must shift education in the direction of quantitative proficiencies, computer literacy, and technology to qualify workers for jobs in small businesses (or large ones) that use computers. Only a small minority of jobs are likely to have these specialized requirements.

We have argued for a balance among communications skills, general knowledge, technical and scientific knowledge, quantitative skills, and knowledge of the arts and humanities on the basis that all of these will be required in our roles as workers, citizens, parents, and members of a social community (Levin and Rumberger 1983, 1986). There is nothing in the survey results that would suggest a modification of this prescription

when it comes to preparing workers for using computers in small businesses. Finally, some exposure to office applications such as bookkeeping and typing was considered helpful for learning to use the computer, but it was not deemed crucial. Only 7 percent of respondents viewed this as the most important worker characteristic, and another 15 percent saw it as the second most important.

In this respect our results differ considerably from some sources that recommend considerably more technical, quantitative, and computer training for persons who will work with computers. For example, the report on AUTOMATION OF AMERICA'S OFFICES of the U.S. Congress' Office of Technology Assessment (1986) states:

> Computers have assumed such an important function in the contemporary practice of business, industry, science, and scholarship that almost no student can expect to remain isolated from these tools. This imposes on education the additional task of preparing students for jobs in which they will use the computer as a partner (p. 85).

No evidence is provided for these assertions, and we believe that they vastly overstates the need for "computer literacy" and "computer knowledge" for the workplace, and employers in all surveys do not make such a strong claim. Again, while computer skills in addition to the other requirements of a strong general education might be desirable, they should certainly not displace more fundamental learning requirements.

A final consideration is the degree to which our survey results on education and training needs comport with other attempts to explore directly the employee needs of workplaces

that have adopted computers. The National Commission for Employment Policy undertook a study of training for work in the computer age (Goldstein and Fraser 1985). The authors conducted interviews with employers, workers, trade and professional associations, unions, computer manufacturers, and schools "...to learn what workers do with computers and how they learn to do it." They concluded on the basis of these interviews that:

> ...although computer use is widespread and growing rapidly, relatively few workers need extensive education or training in computer-related skills; most learn their skills in brief on-the-job training. Young workers need not fear being frozen out of the job market because they have not learned about computers. ...It may seem paradoxical that such widespread use of a technology many people associate with abstruse mathematics and electronics can be attained with relatively little special education and training. Yet this conclusion emerges clearly from the many interviews conducted. To understand this, one needs to recall that such innovations as automobiles, television, plastics, telephones, and electricity have become nearly universal while requiring relatively few highly-trained worker, mostly engineers and crafts workers in their manufacture, installation, or repair. The computer is becoming prevalent mainly <u>because</u> it has been designed, and constantly and ingeniously improved, to make it easy to use.

The National Commission for Employment Policy (1986: 44) found that, on a national basis, only about 0.6 percent of all workers in 1982 were holding jobs that required long periods of training in computer use, and even by 1995 no more than 1 percent of all workers were expected to be in this category. In contrast, some 23 percent of the labor force will be expected to use computers in 1995 with only the minimal computer training that is reflected in this survey of small businesses. We conclude that employee requirements for computer use in small

businesses is typical of this more general use of computers in the workplace rather than requiring extensive training and specialized skills. A capable workforce should be readily available for the task in most labor markets if the schools attend to the fundamental goals of providing literate workers with good on-the-job learning skills.

Footnote

[1] Although the estimates of job growth for small businesses are consistent with our interpretation here, there are differences from study-to-study in methodology and results. A good review of studies and their methods is Richard Greene (1982) and Tom Richman (1983). It can be argued that employment growth of small businesses is understated to the degree that the more dynamic and successful small businesses grow into larger ones or are acquired by larger firms. In these cases, their employment growth after rising to 100 employees or more or being acquired will be reflected in employment growth of large firms.

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Table One

Small Business Universe, NFIB Membership, and Survey Respondents
by Size of Firm and Industry

(percent distribution)

	Small Business Universe[1]	NFIB Membership[2]	Survey Respondents[3]
Size of Firm (Number of FTE employees)			
1-4	57	--	37
5-9	21	70	27
10-19	11	15	13
20-49	7	--	9
50-99	2	13	3
100 +	2	1	1
No reply	--	1	10
TOTAL	100	100	100
Industry			
Construction	14	11	11
Manufacturing and Mining	9	13	12
Transportation, Communications, & Public Utilities	4	3	2
Wholesale trade	10	7	7
Retail	29	27	30
Agriculture, Forestry, Fishing	3	6	5
Finance, Insurance and Real Estate	8	7	7
Services	23	24	24
No reply	--	2	2
TOTAL	100	100	100

SOURCES: [1]U.S. Small Business Administration, The State of Small Business (Washington, D.C.: U.S. Government Printing Office, 1982 and 1984), Tables B.2 and 1.3; [2]National Federation of Independent Business, unpublished tabulations of memberships, June 1985; [3]Tabulations from the IFG/NFIB Survey of Computers in Small Businesses, October 1985. Total sample size is 2,813.

Table Two

Computer Use by Size of Firm, Industry, and Sales Growth

(percent distribution)

	Firms with Computers	Firms without computers	
		Have Investigated	Have Not
All firms (N=2742)	40	18	42
Size of Firm (Number of FTE employees)			
1-4 (N=1034)	26	16	58
5-9 (N=746)	39	22	39
10-19 (N=355)	54	23	23
20-49 (N=244)	73	14	13
50-99 (N=73)	82	10	8
100 + (N=42)	95	5	0
Industry			
Construction (N=315)	36	18	46
Manufacturing (N=323)	47	16	37
Transportation, Communications, & Public Utilities (N=60)	50	15	35
Wholesale trade (N=192)	54	19	27
Retail (N=816)	30	20	50
Agriculture, Forestry, Fishing (N=136)	25	16	59
Finance, Insurance and Real Estate (N=195)	63	21	16
Business and personal services (N=404)	29	18	53
Professional services (N=261)	64	12	24
Sales growth over last 2 years			
New business (N=181)	18	22	60
Declined 5% or more (N=385)	30	16	54
No change (N=389)	36	14	50
Increased 5 to 15 % (N=851)	43	18	39
Increased 15 to 25 % (N=413)	51	19	30
Increased 26 % or more (N=349)	50	18	32

SOURCE: Tabulations from the IFG/NFIB Survey of Computers in Small Businesses, October 1985. Total sample size is 2,813.

Table Three

Hardware and Software Expenditures
by Size of Firm

	Size of Firm (Number of full-time employees)						All
	1-4	5-9	10-19	20-49	50-99	100+	Firms
Hardware expenditures							
Percent distribution							
Less than $1000	8	2	5	1	--	--	4
$1000-$5000	56	35	26	15	13	--	33
$5001-$10000	20	30	24	21	11	9	23
$10001-$40000	14	26	31	35	34	34	26
More than $40000	1	8	14	28	42	56	15
Mean expenditure ($)	7200	13600	21600	37400	87900	113200	25600
Mean expenditure per computer ($)	5400	9800	14800	19900	34500	57300	14700
Software expenditures							
Percent distribution							
Less than $1000	57	31	27	16	6	3	31
$1000 to $5000	35	46	36	33	23	12	36
$5001-$10000	7	13	18	16	17	15	13
$10001-$40000	2	9	15	30	38	36	15
More than $40000	--	1	3	4	15	33	4
Mean expenditure ($)	2100	5200	7500	11200	42600	40100	9700
Total expenditures							
Mean	8400	18400	30000	49400	137900	157600	36300
Mean/annual sales (percent)	8	4	4	3	2	3	5
(N)	(222)	(258)	(168)	(150)	(53)	(32)	(883)

SOURCE: Tabulations from the IFG/NFIB Survey of Computers in Small Businesses, October 1985. Total sample size is 2,813.

Table Four

Uses of Computer by Size of Firm

Application	Size of Firm (Number of full-time employees) 1-4	5-9	10-19	20-49	50-99	100+	All Firms
Wordprocessing	65	57	56	49	60	58	58
Electronic Filing	26	24	17	17	27	13	22
Spreadsheets	43	46	41	56	68	50	48
Data base	25	32	28	32	43	43	31
Accounting	50	64	74	79	95	85	67
Payroll	20	30	43	60	73	85	40
Billing	30	46	51	57	65	63	46
Mailing lists	43	41	41	42	53	60	43
Inventory	26	34	42	47	62	63	38
Statistical Analysis	14	24	20	30	37	43	23
Communications	14	16	18	12	20	28	16
Scheduling	6	7	11	16	18	20	10
Other	21	16	10	13	12	13	15
(N)	(266)	(288)	(188)	(178)	(60)	(40)	(1020)

SOURCE: Tabulations from the IFG/NFIB Survey of Computers in Small Businesses, October 1985. Total sample size is 2,813.

Table Five

Perceived Benefits from Using Computers by Size of Firm

	Size of Firm (Number of FTE employees)						All
	1-4	5-9	10-19	20-49	50-99	100+	Firms
Percent Seeing Benefit							
Improves productivity	52	59	63	71	73	93	62
Reduces labor costs	37	37	39	42	52	63	40
Makes work easier	63	60	60	63	55	65	61
Makes work more enjoyable	34	37	37	28	32	40	34
Improves quality of work	68	64	74	73	72	83	69
Improves information about business	59	64	69	82	77	95	69
Improves organization of business	45	44	49	49	40	50	46
Other	7	7	5	3	5	--	6
(N)	(266)	(288)	(188)	(178)	(60)	(40)	(1020)
Most Important Benefit (percent distribution)							
Improves productivity	23	23	24	26	28	28	24
Reduces labor costs	7	4	6	5	5	5	5
Makes work easier	13	9	6	5	4	5	8
Makes work more enjoyable	1	1	--	--	--	--	1
Improves quality of work	24	21	26	20	18	13	22
Improves information about business	23	32	30	37	33	46	31
Improves organization of business	6	8	7	6	9	3	7
Other	4	3	2	1	4	--	3
(N)	(239)	(252)	(164)	(157)	(57)	(39)	(908)

SOURCE: Tabulations from the IFG/NFIB Survey of Computers in Small Businesses, October 1985. Total sample size is 2,813.

Table Six

Important Characteristics for Learning
to Use the Computer

Characteristics	Relative Importance			Most Important	Second Most Important
	Very	Somewhat	Not		
Interest and enthusiasm	78	19	2	55	18
Reading/comprehension skills	67	31	2	19	27
Reasoning skills	56	40	3	11	26
Application skills	32	59	9	7	15
Formal computer training	16	41	43	6	8
Prior computer experience	8	39	53	2	4
Math skills	16	55	29	0	2
TOTAL				100	100
(N=1058)					

SOURCE: Tabulations from the IFG/NFIB Survey of Computers in Small Businesses, October 1985. Total sample size is 2,813.